



News Clips

Prepared By
The Public Information Office
Wednesday, January 14, 1987

Los Angeles Times Sunday, January 11, 1987

Pasadena to Test New Method of Purifying Water

By ASHLEY DUNN, Times Staff Writer

PASADENA—When city officials first heard that the organic chemical trichloroethylene (TCE) was contaminating ground water in large sections of the San Gabriel Valley in 1979, they barely raised an eyebrow.

The problem had surfaced miles away in Azusa and there was nothing to suggest that the cancer-causing chemical would find its way into Pasadena's ground water.

"We weren't concerned at all, but we figured it would be good PR if we tested our own wells to show everybody how clean they were," said Willard O. Bangham, water system administrator.

But instead of good public relations, city officials got a shock when tests in 1980 showed that TCE was contaminating ground water in large sections of northwest Pasadena and Altadena.

Since then, the city has spent six years testing, analyzing and charting the slow spread of TCE through an underground depression in northwest Pasadena called the Monk Hill sub-area.

Other Cities Interested

This month the city will finally take its first step toward correcting the problem with a \$145,000 pilot purification project that is being closely watched by other cities, including Los Angeles and Burbank, which face similar contamination problems.

The Pasadena pilot project is unusual in that it will use a relatively new process combining the powers of ultraviolet light and ozone to break down volatile or-

ganic chemicals, like TCE, into safe components.

The UV and ozone process has been successfully used to purify extremely contaminated water at aerospace, automobile and semiconductor plants around the country, said Thomas K. Underbrink, water system engineer.

But it has never been used to purify drinking water, and no one is sure if it is economical and reliable enough to treat large volumes of water over several decades, he said.

Underbrink said that if the pilot project is successful, it could clear the way for Pasadena, as well as other cities, to solve water pollution problems with a process that is relatively safe, simple and inexpensive.

The project will be based in a trailer in the Arroyo Seco, purifying less than 100 gallons of water a minute in a file cabinet-sized tank.

If all goes as planned, the city expects to have a full-scale purification plant operating in two years, Underbrink said. The total cost has been estimated between \$3 million and \$5 million, he said.

According to a city study completed in November, the TCE contamination in Pasadena probably was caused by the dumping of solvents at the Jet Propulsion Laboratory from the early 1940s to as recently as 1962.

Fred H. Felberg, institutional associate director for JPL, said the lab has accepted probable blame for the contamination and has agreed to pay for nearly half the

'We haven't gotten down to the nitty-gritty, but in principle we are committed to participating in this.'

Fred H. Felberg
associate director of JPL

pilot project.

In addition, the lab probably will help pay for future expenses, he said. "We haven't gotten down to the nitty-gritty, but in principle we are committed to participating in this."

Methods Changed in 1962

Felberg said that since 1962, the lab has strictly controlled the disposal of hazardous wastes, which are now placed in temporary holding tanks and then hauled away to approved disposal facilities.

Before that time, the lab routinely dumped TCE and other volatile organic chemicals, which were used as solvents, into underground cesspools, a practice common in many businesses that used the chemical, such as machine shops, auto repair shops and dry cleaners.

David Storm, a toxicologist for the state Department of Health Services, said there was little concern about the disposal of volatile organic chemicals until the late 1970s because it was widely believed the chemicals would break down into harmless components before reaching the ground water.

But that belief was discarded in 1979 when significant quantities of the chemicals were found in ground water near an industrial complex in Azusa.

Since then, tests have shown that more than 150 wells throughout Los Angeles County are contaminated with the chemicals. The contamination is mainly concentrated in the San Gabriel and

see next page

from previous page

San Fernando valleys, said Gary Yamamoto, Los Angeles district sanitary engineer with the state Department of Health Services.

He said ground water in both valleys is easily contaminated because of the areas' porous soils and shallow ground water fields.

In Pasadena, the contamination was first discovered in only one well, called Well No. 25, located a few hundred feet from JPL.

Within four years, concentrations of TCE had reached significant levels in another nearby city well, called Well No. 52, and two wells owned by the Lincoln Avenue Water Co.

The state tentatively has set a safe concentration level for TCE at 5 parts per billion, a level at which there would be one extra case of cancer if 1 million people drank the water for a lifetime.

Unsure of Safety Level

But Storm, of the state Department of Health Services, added that there may be no completely safe level of TCE contamination.

"It is believed now that only one molecule can cause cancer if it gets into the system," he said.

The worst case of TCE contamination so far in the Monk Hill sub-area is 79 parts per billion. It was found last August in a Lincoln Avenue Water Co. well near Harriet Street in Altadena, Underbrink said.

A second Lincoln Avenue well has tested as high as 38 parts per billion, and the company is now importing up to 99% of the water for its 4,000 customers from the Metropolitan Water District, said Bob Hayward, office manager for the water company.

In the two city wells, the highest TCE concentrations have been 5 and 37 parts per billion, Underbrink said. Both wells have been shut down for more than a year, and it costs Pasadena about \$200,000 a year to pump more clean water from less efficient wells in other parts of the city.

Three other wells in the Monk Hill sub-area also have shown trace amounts of TCE contamination, Underbrink said. All seven of the wells show traces of two similar volatile organic chemicals, carbon tetrachloride and tetrachloroethylene.

According to the city's study, the level of contamination is expected to increase over the next 20 to 30 years, peaking at levels as high as 200 parts per billion.

The study also estimates that the contamination will eventually disappear after 60 to 80 years as the

pollutant spreads out and is diluted with ground water until it reaches safe levels, Underbrink said.

Unlike other areas, the pollution in the Monk Hill sub-area occurred over a limited period of time and is not being added to now, he said.

"We're really lucky in Pasadena, we have an end in sight," Underbrink said. "People in Los Angeles will have to live with this stuff for almost eternity."

Underbrink said residents in Altadena and northwest Pasadena may have been unknowingly ingesting minute, but possibly hazardous, quantities of TCE.

But he said the contamination was below the acceptable safety level when it was first discovered

'It is believed now that only one molecule [of TCE contamination] can cause cancer if it gets into the system.'

David Storm

toxicologist for the state Department of Health Services

and the well water was usually blended with large quantities of reservoir water. "But we just don't know," he said.

The city's solution to the problem is to pump out the contaminated water and purify it by bubbling ozone through it and exposing it to ultraviolet light, Underbrink said.

Both processes have been used separately for years to disinfect water. But when used together, they can break down organic chemicals like TCE into harmless water, carbon dioxide and chloride, said Carol Tate, project manager for the city's consulting engineering firm, James M. Montgomery Consulting Engineers Inc.

"Each process individually will do a little bit, but together they will do 100%," she said. "It's that dramatic."

Underbrink said it is still not understood exactly why the process works, although it has been proven to be effective on contamination levels hundreds of times higher than what has been found in the Monk Hill sub-area.

"There is no question it will work," he said. "Our stuff is duck soup for UV-ozone."

Tate said the main objective of the pilot project, which will last for six months, is to study the cost and reliability of the process.

Pasadena Mayor John Crowley said the city and JPL are working "as allies and not enemies" to find the funds to build a permanent plant. Both plan to apply for federal funds since JPL was operated by the U.S. Army and later by the National Aeronautic and Space Administration.

The city's plan is different from other areas, which have relied on two proven processes—granulated activated carbon filtration and air-stripping.

Carbon filtration works by passing contaminated water through a column of carbon, which absorbs the contaminants. The process is considered safe and effective, but also the most expensive, according to the city study. In addition, the activated carbon eventually becomes a hazardous material itself after absorbing the contaminants, and some method of safe disposal must be provided, according to the study.

Only One Using Filter

The Hemlock Mutual Water Co., which serves 200 households around El Monte, is the only water system in the San Gabriel Valley using the granulated activated carbon filtration process, said Yamamoto of the state Department of Health Services.

He said two other small water systems in the El Monte area will soon be installing carbon-filtration systems.

The air-stripping process works by pumping large quantities of air through the contaminated water. The water is discharged down through a hollow tower while air is pumped up. The contaminants are "stripped" from the water and are discharged into the atmosphere.

The process is considered safe, effective and relatively inexpensive, according to the study, but it has the disadvantage of polluting the atmosphere with the contaminants that were in the water.

Arcadia has used air-stripping for the last two years and has received no complaints from residents.

But Los Angeles, which is planning a 48-foot, air-stripping tower in North Hollywood, has come under sharp attack from residents about the facility's air emissions.

Filter Adds to Cost

Ernie Wong, water works engineer with the Los Angeles Department of Water and Power, said the city has added a carbon filter to its plans for the air-stripping tower that will trap escaping gases. But the addition of the filter increases

see next page